

TECHNICAL REVIEW DOCUMENT
For
RENEWAL of OPERATING PERMIT 95OPPB097

CF&I Steel, LP dba EVRAZ Rocky Mountain Steel Mills (ERMS) – Steelmaking
Pueblo County
Source ID 1010048

Prepared by: Matthew S. Burgett, P.E.
October 2010

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued December 1, 2001 and expired on November 30, 2006. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted December 1, 2005, along with the revised PSD modification application submitted October 5, 2010 and additional technical information submitted, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document (TRD) for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

The entire facility at this site is a steel manufacturing plant. The sources addressed in this operating permit are those related to the portion of the plant dedicated to the steelmaking process. Briefly, scrap steel along with various additives (e.g. carbon, limestone, oxygen, fluxing agents) are used in the batch steel melting process via the electric arc furnace to produce specific grades of steel. Molten steel is transferred to the ladle metallurgy station, where steel chemistry can be adjusted. The vacuum tank degasser is used to remove certain gaseous constituents for specific steels. The molten steel is transferred to the caster where the molten steel is cast into blooms and billets.

The facility is located adjacent to Interstate 25 on the south side of Pueblo, Colorado at 2100 South Freeway. The area in which the plant operates is designated as attainment for all criteria pollutants.

There are no affected states within 50 miles of the plant. The Great Sand Dunes National Monument is a Federal Class I designated area within 100 kilometers of the facility. Florissant Fossil Beds National Monument is a Federal land area within 100 kilometers of the facility. Florissant Fossil Beds National Monument has been designated by the State to have the same sulfur dioxide increment as a Federal Class I area.

Emissions

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit based on revisions to permitted emission limits, and to update actual emissions.

STEELMAKING POTENTIAL TO EMIT (PTE) – tons per year								
Equipment	AIRS ID	PM	PM ₁₀	NO _x	CO	SO ₂	VOC	HAPs
EAF – Canopy + 4 th hole	114 + 129	89.2	89.2	141.4	1010.0	75.8	65.7	
Round Caster	040	37.94	19.04	35.60	1.55	0.01	0.10	
Ladle Met Station	110	7.02	4.52					
Vacuum tank degasser vent	106				0.87			
Cleaver Brooks boiler	105	0.62	0.62	8.10	6.80	0.05	0.45	
Trestle off-loading	112	0.96	0.46					
Ladle preheat burners	122	1.90	1.90	24.95	20.96	0.15	1.37	
Scrap pile operations	123	0.876	0.876					
Reline ladle refractory	125	0.53	0.53	7.01	5.89	0.04	19.87	
EAF wind erosion	128	0.95	0.95					
TOTAL		140.0	118.1	217.1	1046.1	76.1	87.5	18.5

STEELMAKING ACTUAL EMISSIONS (as reported on most recent APEN) – tons per year								
Equipment	AIRS ID	PM	PM ₁₀	NO _x	CO	SO ₂	VOC	HAPs
EAF – Canopy + 4 th hole	114 + 129	89.2	89.2	141.4	1010.0	65.75	65.65	9.9
Round Caster	040	37.94	19.04	35.60	1.55	0.01	0.10	0
Ladle Met Station	110	7.02	4.517					0.27
Vacuum tank degasser vent	106				0.87			0
Cleaver Brooks boiler	105	0.62	0.62	8.10	6.80	0.05	0.45	0
Trestle off-loading	112	0.96	0.46					0.19
Ladle preheat burners	122	1.90	1.90	24.95	20.96	0.15	1.37	0.47
Scrap pile operations	123	0.876	0.876					0
Reline ladle refractory	125	0.53	0.53	7.01	5.89	0.04	19.87	0.13
EAF wind erosion	128	0	0					0
TOTAL		139.0	117.1	217.1	1046.1	66.0	87.4	10.96

FACILITY-WIDE PTE*								
Equipment	AIRS ID	PM	PM ₁₀	NO _x	CO	SO ₂	VOC	HAPs

All equipment	permitted	-	242.1	193.5	531.4	1540.2	170.2	179.3	18.5
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* facility-wide PTE includes emissions for all permitted equipment. This does not necessarily include emissions from insignificant activities.

NESHAP Applicability

Subpart XXXXXX– National Emissions Standards for Hazardous Air Pollutants: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories:

The rule establishes emission standards in the form of management practices and equipment standards for control of HAPs for nine metal fabrication and finishing area sources.

ERMS reviewed the rule and has determined that they are not subject to this subpart. They do not fall under any of the 9 metal fabrication and finishing categories and the NAICS code does not match any of the NAICS codes identified in the rule (Table 1 of the Federal Register preamble – Regulated Categories and Entities Potentially Affected). In addition, the rule mentions that the primary activity at the facility must be one of the listed 9 source categories. The primary activity at ERMS is to produce steel billets from scrap utilizing the Electric Arc Furnace. The Division agrees that this rule does not apply.

Subpart HHHHHH – National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources.

ERMS reviewed this rule to determine applicability. The Rail Mill does perform paint stripping operations (rail finishing to remove quality markings), but none of the liquids contain Methylene Chloride. ERMS also coats miscellaneous parts, but none of the coatings contain the 5 target HAPs (Cr, Pb, Mn, Ni, Cd). The Division agrees that ERMS is not subject to this rule at this time. Should ERMS start using Methylene Chloride for stripping, or use coatings with any of the 5 target HAPs, this rule would likely apply.

Subpart MMMM – National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products.

This rule is intended to reduce HAP emissions from surface coating onto metal parts/products. It only applies to operations at Major sources of HAPs. It would likely apply to ERMS should they be classified as Major HAPs in the future.

Subpart FFFFF – National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing.

The rule only applies to sinter plants, blast furnaces, and basic oxygen process furnace shops. None of these are located at ERMS.

Subpart ZZZZZ – National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources.

The rule applies to facilities that pour molten metal into molds to produce final or near final shape products for introduction into commerce. The electric arc furnace at ERMS is subject to Subpart YYYYY (see below). The definition of EAF steelmaking facility in Subpart YYYYY excludes EAF steelmaking facilities at steel foundries. Thus, it does not appear that ERMS is subject to Subpart ZZZZZ.

Subpart YYYYY – National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities.

This rule establishes requirements for the control of mercury emissions by requiring purchase of motor vehicle scrap from providers that participate in an EPA-approved program for the removal of mercury switches. ERMS is subject to this rule. This rule will be listed in the Steel Making permit. The Division has not yet adopted the rule into Regulation No. 8. The rule will be listed as a Federal-Only requirement.

NSPS Applicability

Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

The Subpart Dc standards apply to the vacuum tank degasser boiler. This requirement was mistakenly omitted from the previous operating permit. The rule requires minimal reporting and recordkeeping requirements.

Compliance Assurance Monitoring (CAM) Applicability

CAM plans are generally required for emission units that use a control device to meet an emission limitation or standard and has pre-control device emissions above the major source levels. A CAM plan was submitted for the electric arc furnace and will be discussed in Section III of this TRD. The Division identified the Ladle Metallurgy Station baghouse as another control device which requires a CAM plan. This CAM plan was not submitted originally. The Division requested submittal of this plan and will discuss it further in Section III. None of the other emission units are required to obtain a CAM plan as discussed below.

No control device

The following sources/activities are not subject to CAM since they do not utilize a control device to reduce emissions: round caster, Cleaver Brooks boiler, trestle off-loading, ladle preheat burners, scrap pile operations, reline ladle refractory process, and EAF wind erosion. The scrap pile operation and EAF wind erosion do require control measures to reduce particulate emissions and opacity such as watering and drop-height minimization. However, the Division does not believe these measures meet the definition of control equipment in the CAM rule. The preamble to the CAM rule provides more insight into the control technology definition and provides the following (from October 22, 1997 Federal Register, page 54912, 3rd column, under *control devices criterion*)

The final rule provides a definition of "control device" that reflects the focus of Part 64 on those types of control devices that are usually considered as "add-on" controls." This definition does not encompass all conceivable control approaches but rather those types of control devices that may be prone to upset and malfunction, and that are most likely to benefit from monitoring of critical parameters to assure that they continue to function properly. In addition, a regulatory obligation to monitor control devices is appropriate because these devices generally are not a part of the source's process and may not be watched as closely as devices that have a direct bearing on the efficiency or productivity of the source.

The Division considers that the control measures to reduce fugitive and/or visible emissions are not considered an add-on control device and is not the type of device that would benefit from monitoring critical parameters. Therefore, the Division determined that based on the specific provisions in the CAM requirements that fugitive emissions from scrap pile operation and EAF wind erosion are uncontrolled activities for CAM purposes and do not require CAM plans.

Pre-control emissions below the major source level

The following sources/activities are identified as units with pre-controlled emissions below the major source level and therefore not subject to CAM: the vacuum tank degasser vent. The Division has determined that using the uncontrolled emission factor(s) and permitted processing rate(s) that emissions from these sources/activities are below the major source level.

Greenhouse Gasses (GHG)

In 2009 and 2010, EPA issued two rules related to Greenhouse Gasses (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA for meet the GHG reporting requirements.

On May 13, 2010, EPA issued a final rule that sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. Future new construction and/or modifications at your facility may be subject to PSD review for GHG emissions.

III. Discussion of Modifications Made

Source Requested Modifications

A number of modifications were made to the permit as requested by ERMS. Modification requests will be summarized under the appropriate emission source (or permit location) listed below:

Cover page

The facility name was updated.

Page following cover page

The facility contact person was updated. The responsible official has been updated.

Section I – General Activities & Summary

References to EAF #3 and #4 have been removed. Both of these EAFs have been removed from service and replaced by one EAF (#5). References to the billet caster have been removed. This caster is no longer used/permitted.

Federal Consent Decree 03-M-0608

ERMS has requested that APCD include requirements of this CD so that they can pursue CD termination. The CD requires that all injunctive requirements imposed by the CD be incorporated in this Title V operating permit prior to termination. The Division reviewed the CD requirements and determined that some requirements have been fulfilled and no longer apply. The Division informally discussed this with EPA Region 8, and they agreed that requirements may be omitted if they have been fulfilled and are not ongoing requirements. However, EPA also stated that they expect many requirements to continue to be applicable beyond the termination of the CD.

The following table outlines changes and omissions to the Federal Decree language as the requirements were inserted into the Renewal Title V Operating Permit. The Division has included these requirements in Section I of the permit, rather than fully streamlining the requirements into Section II, due to the large number of requirements contained in this CD. This format should facilitate review to verify that the requirements have been incorporated into the permit. Notes have been added to the permit after many of the CD requirements to document if equipment has been installed, and reference any Section II conditions that relate to the CD requirement. In general CDPHE has removed specific dates contained in the Decree that have already passed, in addition to all interim and early emission controls and limitations. ERMS has stated that these early/interim requirements were only applicable during the transition period from 11/26/2003 thru 8/31/2005.

CD 03-M-0608 Requirement Table

CD Paragraph #	Short Description of CD Requirement	Note*
13 – 23		
13	Good air pollution control practices	Omit all – <i>Interim and Early Emission Controls and Limitations</i> no longer apply. Only applicable during the transition period from 11/26/2003 to 8/31/2005.
14	Opacity limitations: 20.0% & 3.0%	
15	15-minute tapping interval	
16	Restriction on simultaneous tapping & charging	
17	Install ultrasonic flow monitors	
18	Implement QA/QC plan for the ultrasonic flow monitors	
19	Closure of unnecessary openings	Omit all - This requirement is superseded by Section II permit condition 1.1.2 which also requires a more stringent 6% opacity.
20	Funding of R.E. Warner	Omit all – <i>Interim and Early Emission Controls and Limitations</i> no longer apply. Only applicable during the transition period from 11/26/2003 to 8/31/2005.
21	Install membrane bags	
23	Pneumatic lime conveyance system	
25	EAF #4 shut down	Omit all – furnace was shut down on 7/28/2005.
26	Shut down both EAFs, new EAF construction.	Omit PSD application language, EAF shutdown/construction language – fulfilled. Include compliance with NSPS & PSD requirements.
27	EAF #3 shut down.	Omit all – requirement fulfilled. EAF #3 shut down 8/31/2005.
28	BACT analysis.	Omit all – requirement fulfilled (compliance with NSPS & PSD covered by other Decree requirements).
29	EPA BACT.	Omit all – requirement fulfilled.
30	PSD appeal.	Omit all – PSD did not appeal PSD requirements.
32	COMS requirement.	Omit “X” determination language. All parties agreed to X = 5%.
33	Independent engineering firm.	Omit all – EPA & CDPHE declined to complete study.
35	EAF #3 operation during new EAF shakedown period.	Omit all – shakedown period over.
38	Baghouse dust transfer system to railcar.	Omit all – requirement fulfilled. Installed on 5/8/2002.
41	Control equipment with 20% & 40% excess capacity.	Omit all – calculations were submitted to EPA and approved 5/24/2007.

44	Fume generation	
49	Ultrasonic flow monitors.	Omit timing requirement.
50	NOx & CO analyzer QA/QC plan.	Re-word the language to remove submittal/comment/approval timelines.
52	Certification by design engineers.	Omit all – designs were discussed, reviewed, and installed with furnace 10/28/2005.
53	Inside slag loading.	Omit time frame language. Include slag loading requirement.
55	Submit revised BACT proposal.	Omit “e” requirement – fulfilled.
56	Rail & Rod/Bar mill requirements.	Omit all – equipment covered by separate Operating Permit.
57	Establish parametric monitoring system.	Omit all – fulfilled. Plan implemented 12/11/2002.
60	Request to modify Title V permit.	Omit all – requirement fulfilled. Requested 12/1/2005.
62	Prepare EMS Manual	Omit all – requirement fulfilled. Manual prepared and submitted 7/31/2003.
63	EMS manual review.	Omit most – include last sentence per EPA request.
64	EMS manual as confidential.	Omit all – ERMS does not want to declare as confidential.
65	Third party audit selection.	Omit all – vendor list was submitted and approved.
67-75	Audit details.	Omit all – audit plan was approved 10/29/2009 and will be included as a permit attachment.
76	Public availability of final agreement or settlement.	Omit all – Audit results submitted 12/31/2009.
77	Night-time opacity.	Omit all – ERMS provides EPA with authorization to use the Eastern Technical Night Opacity Protocol without cost.
78	Petition dismissal.	Omit all – petitions dismissed 12/10/2003.
85	Quarterly reports.	Include all per EPA request. These reports are not required to be submitted once the CD is terminated.

*If no note appears for a specific paragraph in the table, CDPHE has included the full Decree requirement (with the exception of any dates that have already passed).

Many of the consent decree requirements were installed prior to, or along with EAF #5. These requirements are included in Section I since they are not only required to be installed, but also operated and maintained. This already installed equipment includes: deep storage canopy (FCD paragraphs 22 & 46), tapping hood (FCD paragraphs 31 & 45), dropout box (FCD paragraph 34), ladle preheater and dryout hoods (FCD paragraphs 37 & 48), dedicated canopy baghouse (FCD paragraph 42), dedicated fourth hole baghouse (FCD paragraph 43), building enclosures (FCD paragraph 47), ultra sonic flow meters (FCD paragraph 49), upgraded fans and baghouses (FCD paragraph 51), slag loading confined to building (FCD paragraph 53), and NOx and CO stack analyzers on fourth hole baghouse (FCD paragraph 55).

The Division included two requirements of the consent decree as separate conditions. This includes the requirement to operate the Environmental Management System, and conduct the annual environmental audits. These are conditions 7 and 8 in Section I.

ERMS implemented a prototype test NO_x reduction project at its steelmaking facility. This project involved testing the application of Selective Non Catalytic Reduction (SNCR) to the electric arc furnace. SNCR is a technique used to control the emissions of NO_x by injecting a reagent (e.g. ammonia) into the flue gas. The test results identified SNCR application to be technically

infeasible. This resulted in the original NO_x BACT limit found in construction permit 02PB0492 to be unachievable and ERMS submitting the application for modification of the BACT limit.

ERMS has implemented the innovative CO and NO_x control project by installing CO, NO_x and O₂ readouts in the operating pulpit. ERMS has requested that the NO_x limit be modified in accordance with paragraph 55(e) of the consent decree. The appropriate data was presented to the Division over several meetings around January 2007. In addition, ERMS recently supplied the Division with more recent emissions data to support the proposed limits.

State Consent Decree (Case No.: 2000 CV 47)

Similar to some of the Federal CD requirements, many of the state CD requirements have not been included in Section I of the permit. The Division has not included the requirements which are redundant, have been completed, or were interim controls or limits which are no longer valid. The table below outlines the requirements which have not been included.

CD 2000 CV 47 Requirement Table

CD Paragraph #	Note
7 – 8	Redundant with Section II, Condition 1.13
16, 27, 33 – 38, 41	Completed
18	Interim limit
39, 43, 45	Incorporated into Section II, Conditions 1.2, 1.11, 1.18 & 1.21.

COC 2007-077

Past compliance issues associated with the NO_x emission limits at the EAF have been addressed through a State issued Compliance Order on Consent (COC). COC Case No. 2007-077 specifically addresses this issue, and in paragraph 28 establishes interim emission limits to be complied with until the limits are modified through a permit reissuance. The Division believes that ERMS has been compliant with the interim COC limits ever since they were established. The Division does not believe that a compliance schedule is needed due to the issue being addressed in COC Case No. 2007-077, and the fact that issuance of the revised Operating Permit should resolve the NO_x compliance issues.

Section II – Specific Permit Terms

AIRS ID #114 & 129 – Electric Arc Furnace

HISTORY & PROJECT DESCRIPTION

CF & I Steel L.P. dba EVRAZ Rocky Mountain Steel Mills (ERMS) operates a steel mini-mill, and applied for a construction permit for modernization to a new Electric Arc Furnace (EAF) in 2002, now known as EAF #5. EAF #5 replaced two older EAFs that had been operating at ERMS (known as EAF#3 & EAF#4). EAF #5 was reviewed under the Prevention of Significant Deterioration (PSD) requirements, which included a Best Available Control Technology (BACT) determination. PSD and BACT were required in accordance with Consent Decrees (CDs) negotiated with the Colorado Department of Public Health and Environment (CDPHE) and the United States Environmental Protection Agency (EPA) as discussed below.

Prior to the modernization project, the Division had taken several enforcement actions for violations of various provisions of the regulations and permits. Subsequently, a case was filed in the Pueblo District Court against ERMS. EPA took similar action in the Federal District Court. To settle these cases, ERMS entered into consent decrees with CDPHE and EPA. The CDs mandated the EAF modernization. The emissions capture and control systems were upgraded as required in the CDs and PSD construction permit 02PB0492. The upgrades included a dual fabric filter control system (4th hole and canopy controls). The PSD construction permit was

issued on June 21, 2004 and EAF #5 started operating in October 2005.

ERMS submitted an application to revise construction permit 02PB0492. Subsequently, on September 4, 2009 ERMS requested the application be processed as a combined construction permit-operating permit. Requested revisions consist of an increase in the NO_x BACT emission limit, an increase in steel production on an annual and short-term basis, and emission limit increases associated with these changes. ERMS states that the original NO_x BACT emission limit established in the PSD Initial Approval construction permit 02PB0492 (issued June 21, 2004) is unattainable and should be increased. This was recognized as a possibility during development of the federal consent decree and the initial approval permitting process. In addition, EAF #5 is able to operate more efficiently than originally anticipated and ERMS requests an increase in steel production from 1,000,000 tons of steel per year to 1,010,000 ton/yr. ERMS originally submitted the application to increase production to 1,350,000 ton/yr, since this is the estimated maximum annual production of the EAF. ERMS revised the application to reduce the annual production to match the limit contained in the federal CD. This will facilitate termination of the federal CD. As a result of these facts, the Air Pollution Control Division (Division) considers these requests to be a continuation of the original project. As such, EAF #5 must be reviewed again under the PSD requirements, including a full revised BACT determination for all pollutants emitted above the significance level and an air impact modeling analysis.

The EPA submitted comments to the Division on November 8, 2010 requesting that the Division clarify in the TRD what emissions increases may occur downstream of the EAF, and why specific baseline pre-project emission values were used in the modeling analysis. The Division has included a discussion of these topics below.

The Division does not believe that there will be any direct emission increases at the rail mill or rod/bar mill as a result of this project. Production and operation at the downstream mills are driven by market conditions. ERMS supplements billet steel produced from EAF #5 by purchasing billets on the open market as needed. As such, the downstream mills have not had their utilization limited as a result of the EAF permit limitations. ERMS provided the Division with data on the amount of billets purchased over the last five years. This data is business confidential and will not be provided in this public document. Since these mills can meet market demand independently of the EAF through billet purchases, the Division does not believe that increased utilization of the downstream mills has occurred as a result of this project.

The EPA has asked the Division to clarify why specific baseline pre-project emission values were used in the modeling analysis for this project. The Division considered the information contained in the federal CD, past permits, the proposed Title V permit, historic production rates at ERMS, and relevant test data to establish the appropriate emission rates to be used in the modeling analysis and respond to EPA's question.

The EPA conducted a thorough investigation of the historical ERMS facility operations which resulted in the 2003 federal Consent Decree. The Consent Decree (CD) required ERMS to remove EAF #3 & EAF #4 and install EAF #5 with BACT. The federal CD (paragraph 31) states that the steel production increased from 800,000 tons per year to 1,400,000 tons per year "during the previous two decades", i.e. in the period from approximately 1983-2003. A review of Division files as well as discussions with both our staff and ERMS staff have not been able to identify the validity of the statement in the CD that "Rocky Mountain Steel increased its steel production capacity from 800,000 tons per year to 1,400,000 tons per year." An analysis of 20 years of data (1983-2003) obtained from ERMS shows a maximum annual steel production of almost 30% less than the 1,400,000 tons per year referenced in the CD. Over the 10-year period of 1993-2003, steel production was mainly in the range of 900,000 tons per year, \pm 10%. As with any business, the output of ERMS is controlled primarily by the economy, purchase contracts and orders, which is variable year to year. It is important to note that the steel production figures represent an increase in actual production, not a change in permitted limits. The retired EAFs had no permit restrictions on steel production, and the modeling analysis makes use of allowable

emissions, not actual emissions. In fact, from an engineering standpoint, the capacity or design rate of an EAF is a somewhat amorphous concept. It was not until a 2003 stack test when ERMS made a concerted effort to maximize the steel production for purposes of the test that the "old" EAF's were even assigned a design rate. Prior to that, the only data available is based on actual steel production.

Since modeling must consider maximum short-term net impacts of the project, it was necessary to determine the PTE of the old EAF's. These units were originally permitted in the 1970's and the construction permit did not contain any steel production limits or any other annual or short term limits. Although there was some original information available from the manufacturer circa 1980 regarding design capacity, the Division elected to use the results of the 2003 stack tests conducted by ERMS to more accurately determine the PTE of the existing EAF's in order to maximize the accuracy of the pre (baseline) and post project modeling impacts. Using the design rate from the stack test and the appropriate emission factors, the Division was able to accurately determine the PTE for the existing EAF's. Note that this process was conducted as part of the short-term PSD modeling analysis and that it is unrelated to the process that is used to establish baseline emissions using a representative two-year period for conducting an "actual-to-potential" test for use in a net emissions increase calculation.

For project modeling purposes, the Division considers the project to be the removal of the two retired EAFs, and construction of the one ultra-high power EAF #5. The Division, the EPA, and ERMS agreed to resolve past violations at the ERMS facility via the CDs. The issuance of the CDs established a logical break point to which the Division can consider the changes required in the CDs to be a distinct project. Post-project allowable emission rates are based on limitations in the proposed draft operating permit. Important aspects of the operation/permit which were used to establish the post-project rates include the emission factors, short-term limitations (e.g. BACT limits) and the maximum design rate of the EAF #5. The modeling exercise involves comparing the post-project allowable emission rates to the pre-project allowable emission rates. Use of representative stack parameters is also an important aspect of this modeling analysis.

While EPA entered into a settlement and Consent Decree with RMSM to resolve compliance issues and to complete a BACT review in 2003-2005, there were not specific actions after EPA's investigation documented in the published federal Consent Decree that would alter the Department's basic understanding of facility operations in that general timeframe (see, Para. 31 of the April 9, 2003 Complaint, U.S.E.P.A. and RMSM). The federal Consent Decree documents and confirms that the facility compliance status with Clean Air Act requirements and permitting were addressed and resolved through 2003 by the actions set forth in that Consent Decree, which were then instituted in the 2005 timeframe. The state observes that the federal Consent Decree also resolved disputes between EPA and the facility as to assertions of compliance issues, to avoid litigation, and contains statements that the facility does not admit to potential non-compliance during the time period prior to the settlement that is generally alluded to in the consent decree document (see pg 2 of the April 9, 2003 Consent Decree, U.S.E.P.A. and RMSM).

In summary, it is the Division's opinion that the 2003 stack tests are appropriately representative for pre-project (baseline) short-term maximum impacts.

ERMS submitted an application for the permit changes on December 20, 2007. This application did not include an air impact modeling analysis and was not considered a complete application. ERMS revised the application with an October 21, 2008 submittal that did include air impact modeling. The Division sent an application incomplete letter to ERMS on November 21, 2008. This letter outlined the application items that needed to be revised/submitted to consider the application administratively complete. ERMS submitted another revised application on January 9, 2009. Supplementary information was also sent to the Division via various emails from ERMS and their consultants. The Division sent a completeness letter to ERMS on February 26, 2009. The Division considers the application to be administratively complete as of January 30, 2009.

ERMS submitted another application revision to the Division on August 10, 2009. ERMS submitted a BACT addendum on October 16, 2009 to address PM_{2.5} emissions. A final revised application was submitted October 5, 2010. In addition, the operating permit renewal application was submitted to the Division on December 1, 2005.

Requested Throughput: 1,010,000 ton of steel produced per year, 185 tons per hour.

EMISSION FACTORS (EAF#5)

The following emissions result from steelmaking in EAF #5. Two stacks exist to manage the emissions from EAF #5 and convey them to the two fabric filter control devices.

Pollutant	Emission Factor*	Emission Factor Notes
Particulate Matter (PM):	0.0052 gr/dscf	Condensable plus Filterable
Particulate Matter<10 µm (PM ₁₀):	0.0052 gr/dscf	Condensable plus Filterable
Sulfur Dioxide (SO ₂):	0.15 lb/ton	
Volatile Organic Compounds (VOC):	0.13 lb/ton	
Nitrogen Oxides (NO _x):	0.28 lb/ton	
Carbon Monoxide (CO):	2.0 lb/ton	
Lead (Pb):	0.00057 lb/ton	
Mercury (Hg):	4.58e ⁻⁴ lb/ton	Estimate based on multiple stack tests

*Generally from VI.A.1 of October 5, 2010 application.

SUMMARY OF EMISSIONS (EAF#5)*

Pollutant	Requested Emissions (ton/yr)	Peak Rate (lb/hr)
Particulate Matter (PM):	89.2	36.6
Particulate Matter<10 µm (PM ₁₀):	89.2	36.6
Sulfur Dioxide (SO ₂):	75.8	27.7
Volatile Organic Compounds (VOC):	65.7	24.0
Nitrogen Oxides (NO _x):	141.5	51.8
Carbon Monoxide (CO):	1010.0	370.0
Lead (Pb):	0.29	0.10
Mercury (Hg):	0.25	0.08

*Generally from Table 3-1 & 3-3 of October 5, 2010 application.

The application states that the fluoride emission rate is below the significant emission rate of 3 ton/yr and does not require BACT review.

APPLICABLE REGULATIONS

Public Notice: This application is subject to public comment for the following reasons (Regulation No. 3, Part B, III.C & Part C, VI.):

- Projected controlled annual emissions exceed 50 tons per year.
- The EAF is subject to National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities (Subpart YYYYYY).
- The EAF is subject to a BACT determination.

- This permit action incorporates an operating permit renewal.

In addition, any interested person may submit a written request for a public comment hearing to be held pursuant to section 1.7.0. of the commission's procedural rules to receive comments regarding the foregoing concerns, the sufficiency of the preliminary analysis, and whether the division should approve or deny the permit application.

BACT: As previously mentioned, BACT is required as part of Consent Decrees negotiated between ERMS, CDPHE and EPA. The following pollutants are emitted above the significance levels and require BACT review: PM & PM₁₀, NO_x, SO₂, VOC, & CO. (Regulation No. 3, Part D, VI.A.1). See below for the BACT Analysis.

Source Impact Analysis: The owner or operator of the proposed source or modification shall demonstrate to the Division that allowable emission increases from the proposed source or modification in conjunction with all other applicable emissions increases or reductions (including secondary emissions) will not cause or contribute to concentrations of air pollutants in the ambient air in violation of (Regulation No. 3, Part D, VI.A.2)

- Any state or national ambient air quality standard in any baseline area or air quality control region;
- Any applicable maximum allowable increase over the baseline concentration in any area.

See below for the Air Quality Impact Analysis starting on page 27.

National Emissions Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities (40 CFR Part 63 Subpart YYYYY):

- This rule reduces mercury emissions by requiring that EAF steelmakers buy motor vehicle scrap from providers that participate in an EPA-approved program for the removal of mercury switches.
- This rule also reduces emissions of other toxic metal compounds by limiting particulate matter (PM) emissions as a surrogate. This facility is required to meet a PM limit of 0.0052 grains per dry standard cubic foot.
- This rule reduces emissions of toxic air pollutants such as mercury, lead, manganese, nickel, and chromium. These chemicals are known or suspected to cause cancer, other serious health problems and environmental damage.

For more information see: http://www.epa.gov/ttn/atw/elec_arc/eafpg.html

Applicable requirements of this subpart have been included in the operating permit. ERMS is currently complying with this rule through the use of a pollution prevention plan (63.10685(a)(1)) and purchase of scrap through approved mercury programs (63.10685(b)(2)). The Division will include the other compliance options in the permit to allow for future flexibility and note the current compliance option in the permit.

The Pollution Prevention Plan was submitted to the State and the EPA on June 30, 2008. The Division has not yet reviewed/approved the plan since this rule is not yet adopted into Colorado's Regulation No. 8. ERMS must continue to operate according to the plan as submitted during the review process.

Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983 (40 CFR Part 60 Subpart AAa):

- This rule contains limits on emissions of particulate matter from the control devices.
- This rule contains limits on opacity from the control devices and other operations. A continuous emission monitoring system is required to monitor opacity from the control devices.

For full rule text see: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=185bdc165a6c68b9a1df1bc3fa8e658c&rqn=div6&view=text&node=40:6.0.1.1.1.43&idno=40>

Applicable requirements of this subpart have been included in the operating permit.

BACT & RACT ANALYSIS

Best Available Control Technology (BACT) has been defined in Colorado's Regulation No. 3, Part D, II.A.8 as "An emission limitation (including a visible emissions standard) based on the maximum degree of reduction of each air regulated NSR pollutant subject to regulation under the Federal Act that would be emitted from any proposed major stationary source or major modification that the division or commission, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of the best available control technology result in emissions of any pollutant that would exceed emissions allowed by the applicable standards in the Code of Federal Regulations, Title 40, Parts 60 and 61 (Regulation No. 6, Part A, and Regulation No. 8, Part A) as in effect on the effective date of this clause, but not including later amendments, unless such amendments are specifically incorporated by reference in accordance with the provisions of Colorado Revised Statutes section 24-4-103 (12.5)."

Control technologies were evaluated using EPA's "top-down" analysis procedure to make the BACT determination. This procedure ensures that each determination considers the most stringent control technologies available, and presents a reasoned justification for the BACT determination, considering energy, environmental and economic impacts and other costs.

Emissions Capture:

In response to historic problems with emissions capture, ERMS was required to install a robust emission capture system to ensure complete capture. The system was designed to have at least a 20% long term excess capacity and a 40% short term excess capacity over the capacity which would ensure complete capture during normal operation. This will allow the system to capture and control all emissions that result from fluctuations in materials or process. This is referred to as a "robust" capture system. This applies to both the Direct-shell Evacuation System (4th hole – SRC #3) and the Canopy Hood (SRC #1) individually. ERMS has demonstrated that the gas handling fan(s) and fabric filters have these required capacities, and that the operation controls allow utilization of such excess capacities when needed. 100% capture of emissions is assumed since the system has been designed with this excess capacity.

The Direct-shell Evacuation System (DES) is composed of a lid above the furnace, and associated ductwork attached to the fourth hole in the furnace roof, which maintains a negative pressure within the EAF above the metal and ducts these emission to the 4th hole baghouse. Emissions from the melting portion of the steelmaking process are collected primarily with the DES.

The canopy hood system is composed of a hood and ductwork in the roof above the EAF, which capture emissions that rise from the EAF and ducts them to the canopy baghouse. The canopy hood system primarily collects emissions during periods in the steelmaking process when the DES lid is open, namely, charging and tapping.

PM & PM10:

The process results in the emissions of both filterable and condensable particulate matter. Emissions will be captured through the use of the Direct-shell Evacuation System (DES) and the canopy hood system. Fabric filters will be used as the BACT control technology. The baghouses have membrane-lined filter bags to achieve high control efficiency. Concentration of filterable

particulate matter in the baghouse outlet will not exceed 0.0018 grains per dry standard cubic foot. Concentration of total particulate matter, including condensables, will not exceed 0.0052 grain per dry standard cubic foot. Opacity of visible emissions in the baghouse exhaust will not exceed 3%. The system will be operated in order to maintain sufficient negative pressure to ensure that EAF emissions are completely captured by the control system. Other meltshop emissions shall not exhibit greater than 6% opacity.

EPA's RACT/BACT/LAER Clearinghouse (RBLC) was reviewed and revealed that fabric filters are commonly used to achieve BACT. ERMS reviewed other control options, including cyclones, scrubbers, and electrostatic precipitators. However, none of these other control options would achieve a higher level of control for particulate matter.

The control system exhaust concentration limit of 0.0018 gr/dscf filterable PM₁₀ was compared to other limits in the RBLC. This limit is the lowest limit for filterable PM/PM₁₀, with the exception of Ohio's New Steel International facility (RBLC ID OH-0315), with a limit of 0.0014 gr/dscf. However, compliance with this one lower limit has not been verified. The Division has determined that the ERMS limit of 0.0018 gr/dscf filterable PM₁₀ represents BACT.

Annual source testing shall be conducted to demonstrate compliance with the filterable particulate matter limit. In addition, a continuous opacity monitor (COM) shall be operated on the 4th hole baghouse. The Division and EPA have previously agreed to a COMS opacity compliance level of 5% with ERMS. This level is based upon the technical aspects of the COMS as it relates to the calibration filters. Readings below 5% may not be accurate. Thus, the official limit remains at 3%, but compliance will be monitored using a 5% opacity maximum on COMS readings.

PM_{2.5}:

PSD provisions for PM_{2.5} are not yet incorporated into Regulation No. 3, Part D, and Colorado regulations do not currently contain a PSD significance level for PM_{2.5}. In addition, the Consent Decrees do not identify PM_{2.5} as a pollutant requiring BACT. However, ERMS thought it prudent to revise the application with a discussion of BACT as it relates to PM_{2.5}.

Filterable PM_{2.5} and condensable PM_{2.5} emissions will result from EAF operations. ERMS believes that the overall amount of condensable PM in the EAF exhaust would not be as great as for fossil fuel combustion sources. In addition, little data is available on condensable PM_{2.5} emissions from EAF operations. As such, their analysis focused on the filterable PM_{2.5} emissions.

ERMS determined that the only reasonable control approach would be the use of baghouses due to the nature of EAF operations (metallic dust content, high and variable volumetric flow rates). ERMS states that the current baghouses achieve the lowest possible filterable PM_{2.5} emissions and should be considered BACT.

EPA's RACT/BACT/LAER Clearinghouse (RBLC) was reviewed and revealed that fabric filters are commonly used to achieve BACT for PM emissions. The New Steel International, Inc. determination (RBLC ID OH-0315) does contain a LAER PM_{2.5} emission limit listed as 0.0032 gr/dscf. However, the RBLC notes state that PM₁₀ is used as a surrogate for PM_{2.5}. The Division found no other instances of PM_{2.5} BACT or LAER limits on EAFs in the RBLC.

The Division believes the proposed PM₁₀ BACT requirements would be adequate to assure BACT-level control for PM_{2.5}.

Lead (Pb):

Lead is present in trace quantities in the raw material. Lead will be emitted as particulate matter while operating the EAF. Controlling Pb emissions will be equivalent to the control of filterable PM. The BACT selected for filterable PM will also be considered BACT for Pb emissions. See

the PM BACT discussion above. A fabric filter in combination with a DES represents BACT for Pb emissions. ERMS has proposed a Pb BACT limit of 0.00057 pound per ton of steel produced.

Review of the RBLC revealed that fabric filters are commonly used to achieve BACT. One lower emission limit was posted (0.0002 lb/ton at New Steel International, RBLC ID OH-0315). This is for a new facility and compliance with the limit has not been demonstrated. The RBLC supports the Division's determination that a BACT limit of 0.00057 lb/ton is appropriate. The averaging time will be based upon the duration of the applicable test method.

Emission testing for Pb was conducted in 2006 on the EAF baghouse exhaust stacks. The measured emission rate complied with the proposed BACT limit. The Division will require emission testing at least every five years to demonstrate compliance with the BACT limit.

Oxides of Nitrogen (NO_x):

NO_x is mainly formed in the EAF through the reaction of nitrogen gas and oxygen gas at high temperature (often called "thermal NO_x"). ERMS will control NO_x emissions using modified and optimized furnace operational practices such as the use of varying electric and chemical inputs, lancing practices, and foamy slagging practices in order to minimize the amount of furnace-out NO_x emissions. In addition, ERMS uses low NO_x burners in the EAF and a well-designed and operated EAF and DES to minimize NO_x emissions from the EAF. ERMS has proposed a NO_x BACT limit of 0.28 pound per ton of steel produced, on a 30-day rolling average basis.

This proposed BACT limit is an increase from the previous permit limit of 0.15 pounds per ton of steel produced, averaged daily. ERMS is unable to achieve compliance with the previous NO_x BACT limit imposed in the Initial Approval construction permit. This was anticipated as a possibility during the entry of the federal consent decree and during the initial approval permitting process. The Division agrees that the original BACT limit is unattainable and will modify the limit to 0.28 pound per ton of steel produced. ERMS is confident that this BACT limit can be achieved based on actual NO_x CEMs data and stack testing.

The proposed BACT changes the averaging period from calendar day basis to a 30-day rolling basis. The interim BACT emission limit from APCD's Compliance Order on Consent (COC) 2007-077 were also presented as a 30-day rolling average. ERMS has requested this change in averaging period based upon the concerns associated with the operation being a batch process and the process being subject to periods of zero production due to production delays, equipment failures, maintenance, and power curtailments. These periods of zero production may still have some residual emissions detected by the CEMS. When these periods are viewed over a short term, they would result in a high pound per ton emission rate, even though the actual pounds of emissions were very low. ERMS discussed various options with the Division, including data deletion, and data substitution. Revising the averaging period was a more simple and direct way to address the problem, while still being appropriate for BACT.

DES combined with selective catalytic reduction (SCR) was considered as a control option. Temperatures, catalyst wear and poisoning, and varying operating conditions due to batch processing make SCR a technically infeasible control option.

DES combined with selective noncatalytic reduction (SNCR) was considered to reduce NO_x from the 4th hole exhaust. ERMS conducted an evaluation on the feasibility of SNCR controls as part of the consent decree. It was demonstrated that SNCR technology is an infeasible option for steel mini mills due to temperature fluctuations over the melt cycle, and variable NO_x and O₂ concentrations.

Review of the RBLC revealed no use of add-on controls for NO_x reduction. One slightly lower emission limit was posted (0.27 lb/ton at Nucor Auburn. NY-0094). ERMS states that Nucor's product mix is a lower grade rebar-type mix involving different furnace chemistry, and this

accounts for the lower BACT limit. The RBLC supports the Division's determination that a BACT limit of 0.28 lb/ton is appropriate.

CEMs shall be used for the fourth hole exhaust to demonstrate compliance with the NO_x limit. In addition, annual source tests shall be conducted on the canopy exhaust to demonstrate compliance.

Carbon Monoxide (CO):

CO is formed by the EAF as a reaction of the carbon and oxygen present in the system at high temperatures. An air gap was designed between the DES elbow and DES duct to introduce ambient air containing oxygen for combustion of CO in the furnace exhaust gas. CO emissions are also reduced using optimized furnace operational practices such as the use of varying electric and chemical inputs, lancing practices, and foamy slagging practices in order to minimize the amount of furnace-out CO emissions. ERMS has proposed a CO BACT limit of 2.0 lb/ton of steel produced, on a 30-day rolling average basis. The 30-day rolling average is appropriate as discussed above for NO_x.

DES combined with a catalytic oxidizer in the EAF ductwork upstream of the EAF baghouse was considered as a control option. Plugging, erosion, and catalyst poisoning make this option a technically infeasible control option.

DES combined with thermal oxidation was considered as a control option. Little additional control of CO emissions would result as compared to a DES with an air gap for CO combustion. The Division is not aware of any application of thermal oxidation to control CO from an EAF. Additionally, a thermal oxidizer would have an adverse environmental impact due to the natural gas combustion resulting in additional generation of NO_x. Based on these considerations, use of thermal oxidation is not considered BACT.

DES combined with additional burners (added downstream of the combustion air gap) was considered as a control option. These burners would be operational during periods of time when the exhaust gas temperature is not considered ideal for CO combustion to occur. Generally this would occur early in the melt cycle. During most of the melt cycle, the furnace exhaust temperature is well above the temperature required to combust CO. The Division is not aware of any application of additional burners to control CO from an EAF. Use of additional burners would have an adverse energy, and environmental impact due to the natural gas combustion resulting in additional generation of NO_x. Based on these considerations, use of additional burners is not considered BACT.

Review of the RBLC revealed no use of add-on controls for CO, other than direct evacuation with an air gap. The most common BACT limit found was 2.0 lb/ton, with several other limits set above this limit. The RBLC supports the Division's determination that a BACT limit of 2.0 lb/ton is appropriate.

CEMs shall be used at each baghouse exhaust to demonstrate compliance with the CO limit. See below (Monitoring and Compliance Demonstration) for more discussion of the CEMs.

Volatile Organic Compounds (VOC):

VOC is emitted from the EAF due to organic compounds in the electrodes, carbon, and scrap material charged in the furnace. VOC emissions are controlled by thermal oxidation within the furnace and at the air gap between the DES elbow and DES duct. ERMS has proposed a VOC BACT limit of 0.13 pound per ton of steel produced, averaged over the duration of the applicable test method(s).

DES combined with a catalytic oxidizer in the EAF ductwork upstream of the EAF baghouse was considered as a control option. Plugging, erosion, and catalyst poisoning make this option a technically infeasible control option.

DES combined with thermal oxidation was considered as a control option. Little additional control of VOC emissions would result as compared to a DES with an air gap. ERMS states that this control technology would cost well over \$10,000 per ton of VOC removed and not considered cost effective. Additionally, a thermal oxidizer would have an adverse environmental impact due to the natural gas combustion resulting in additional generation of NO_x. Based on these considerations, use of thermal oxidation is not considered BACT.

DES combined with additional burners (added downstream of the combustion air gap) was considered as a control option. These burners would be operational during periods of time when the exhaust gas temperature is not considered ideal for VOC combustion to occur. Generally this would occur early in the melt cycle. During most of the melt cycle, the furnace exhaust temperature is well above the temperature required to combust VOCs. The Division is not aware of any application of additional burners to control VOC from an EAF. Use of additional burners would have an adverse energy, and environmental impact due to the natural gas combustion resulting in additional generation of NO_x. Based on these considerations, use of additional burners is not considered BACT.

Review of the RBLC revealed BACT limits as low as 0.03 pound per ton, with a majority of the limits set at 0.13 pound per ton or higher. The RBLC states that the 0.03 lb/ton rate is unverified. ERMS states that the very low limits in the RBLC are not consistently achieved and should not be considered, and some of the other lower limits are for stainless or specialty steel EAFs, or facilities not yet constructed (compliance unverified), and should not be considered either. The Division viewed some RBLC entries that required pollution prevention via a scrap management plan. The scrap management plan would control the use of material that could result in higher VOC emissions. The Division will include a BACT provision to limit the proportion of oily scrap (borings, turnings, properly drained used oil filters, etc.) charged in each batch to less than 3% of the total scrap. This is consistent with the requirements of ERMS's Scrap Management Plan as required in Condition 9.2 of the operating permit.

The Division will require emission testing every five years to demonstrate compliance with the BACT limit.

Sulfur Dioxide (SO₂):

Sulfur enters the EAF process as a component as part of the raw materials (coke/carbon, scrap), and some reacts with oxygen to form SO₂ which is exhausted from the furnace. A portion of the SO₂ may react with lime in the furnace, and gas stream and be captured in the slag and baghouse dust. ERMS has proposed a SO₂ BACT limit of 0.15 pound per ton of steel produced, averaged over the duration of the applicable test method(s).

This proposed BACT limit is a decrease from the previous permit limit of 0.25 pounds per ton of steel produced, averaged daily. ERMS requests to monitor compliance via periodic stack testing as opposed to the use of CEMS as required by the Initial Approval permit. This request is based on consistent problems with the Relative Accuracy Test Audits (RATA) due to the low SO₂ concentrations in the exhaust stream. The Division accepts the use of periodic stack testing to monitor compliance based on the technical problems associated the RATA, and the low emission rates which have been monitored.

DES combined with various flue gas desulfurization technologies was considered as a control option. This technology is typically employed on medium to high sulfur fuel combustion systems, which result in relatively high flue gas SO₂ concentrations. The flue gas SO₂ concentration at the ERMS EAF is consistently low, and none of these flue gas desulfurization techniques would be appropriate with such low SO₂ levels, and they are considered technically infeasible.

Use of specialty low sulfur coke was considered as a control option. This could theoretically reduce SO₂ emissions by up to 50%. However, the cost effectiveness exceeds \$20,000 per ton

SO₂ reduced. The Division does not find this to be economically feasible control option due to high costs.

Review of the RBLC revealed no use of add-on controls for SO₂ reduction. ERMS's request of 0.15 lb/ton was nearly the lowest limit listed. One slightly lower emission limit was posted (0.13 lb/ton at New Steel International. OH-0315). This is for a new facility and compliance with the limit has not been demonstrated. The RBLC supports the Division's determination that a BACT limit of 0.15 lb/ton is appropriate. Periodic source tests shall be conducted to demonstrate compliance with this BACT limit.

The Division will require emission testing every five years to demonstrate compliance with the BACT limit.

Fluorides:

Fluorides are considered a criteria pollutant. Fluorides do not include hydrogen fluoride (HF) since HF is a HAP. ERMS has demonstrated that emissions of non-HF fluorides do not exceed 3.0 ton/yr, based on stack testing conducted 10/5/2006. BACT is not required for fluorides.

Emissions Capture:

Prior to the EAF modernization project, emissions capture had been inadequate resulting in repeated violations of opacity limits for emissions from building, through various openings in the building(s). A robust emission capture system was installed to ensure complete capture. The system was required to have at least a 20 % long term excess capacity, and 40 % short term excess capacity over those which ensure complete capture during normal operation and will be able to control emissions that result from fluctuations in materials or process. This is referred to as "robust" capture system. This applies to both the Direct Evacuation System (4th Hole designated as SRC #3) and Canopy Hood (designated as SRC #1) individually. ERMS has demonstrated that the gas handling fans and emissions control baghouse(s) have these capacities, and that the operation controls allow utilization of such excess capacities when needed.

RACT (Regulation No. 3, Part B, III.D.2 & Regulation No. 7, II.C.2): Does not apply since ERMS is not located within a nonattainment or attainment/maintenance area.

MONITORING AND COMPLIANCE DEMONSTRATION PROCEDURES

Annual emission limits and an annual steel production limit have been included as permit conditions. Additionally, a short-term steel production limit (averaged daily) has been included. Compliance with the annual limits must be determined on a rolling 12-month basis. Specific monthly emission/production limits are not necessary since the applicant is not requesting emission limits to avoid any applicable requirement such as Title V or a PSD Major Modification, and additional short-term BACT limits are contained in the permit.

CO emissions will be tracked via CEMs installed on both exhaust stacks. The original PSD construction permit required on-going semi-annual source tests for CO on the canopy exhaust stack (SRC 1) in permit condition 14. However, permit condition 15 required installation of CEMs on this stack if CO emissions exceeded 100 ton per year. Testing conducted in 2006 revealed CO emissions in excess of 100 tpy. A CEMs was installed on the canopy exhaust in April 2007. The Division identified that ERMS failed to install the CO CEMs in a timely manner. This violation was resolved through COC 2007-077 (paragraph 20.k). The Division sent a certification letter for this CEMs to ERMS on October 18, 2007.

ERMS installed a CO CEMs on the DES exhaust (SRC 3) as required by the original PSD construction permit (condition 11). However, many problems resulted from the first CEMs, including extensive down time. ERMS ultimately replaced the CEMs with a different system.

Testing was conducted in June 2007 to certify the CEMs. The Division sent a certification letter for this CEMs to ERMS on September 10, 2007.

ERMS installed a NO_x CEMs on the DES exhaust (SRC 3) to monitor emissions as required by the original PSD construction permit (condition 11). However, many problems resulted from the first CEMs, including extensive down time. ERMS ultimately replaced the CEMs with a different system. Testing was conducted in June 2007 to certify the CEMs. The Division sent a certification letter for this CEMs to ERMS on September 10, 2007.

NO_x emissions in the canopy exhaust stack (SRC 1) were measured via stack testing as required in the original PSD construction permit (condition 14). Condition 13 of that permit required ERMS to develop a site specific emission factor based on this testing. The operating permit will continue to require ERMS to conduct NO_x testing on SRC1 on an annual basis, and use the NO_x CEMS and stack test results to demonstrate compliance with the NO_x emission limitations. A ratio of NO_x emissions from SRC 1 and SRC 3 will be used along with the NO_x CEMS data (SRC 3) to calculate emissions from SRC 1. A starting default ratio of 0.53 will be required. This ratio is based on data from previous testing. ERMS will need to review this ratio annually within 75 days of the stack testing (to allow for testing results and review) to determine if the ratio is still appropriate. If testing reveals a higher ratio, ERMS must revise recent emission calculations to account for the revised ratio.

ERMS installed an SO₂ CEMs on the DES exhaust (SRC 3) as required by the original PSD construction permit (condition 11). ERMS requested removal of the SO₂ CEMs in 2007 due to the very low SO₂ concentration detected in the exhaust. This low concentration was causing problems with CEM RATA testing. The Division agreed that ERMS could remove the SO₂ CEMs and conduct routine SO₂ testing instead. A letter authorizing removal of the SO₂ CEMs was sent by the Division on March 24, 2008.

SO₂ emissions in the canopy exhaust stack (SRC 1) were measured via stack testing as required in the original PSD construction permit (condition 14). Condition 13 of that permit required ERMS to develop a site specific emission factor based on this testing. The operating permit will continue to require ERMS to conduct SO₂ testing on SRC1 and SRC3 on a routine basis, and use the stack test results to demonstrate compliance with the SO₂ emission limitations. Annual testing will be required in the permit with a reduced testing frequency if emissions are found to be below 75% of the emission limits (annual & BACT). If emissions are shown to be below 75% of the limits, testing is then required within three years instead of annually. If emissions are shown to be below 50% of the limits, testing is then required within five years instead of annually.

PM emissions in the canopy exhaust stack (SRC 1) and DES exhaust (SRC 3) were measured via stack testing as required in the original PSD construction permit (condition 14). On-going annual testing was required by the original PSD construction permit and will be included in the operating permit as an applicable requirement in order to demonstrate compliance with the PM emission limitations.

ERMS installed a Continuous Opacity Monitor (COM) on the DES exhaust (SRC 3) as required by the original PSD construction permit (condition 11) to monitor opacity. The canopy exhaust stack uses a particulate monitor to check relative particulate concentrations in order to detect problems with the canopy baghouse. The COM and particulate monitor are used as monitoring devices in the CAM plan.

ERMS has installed a monitor on the EAF to detect emissions of Mercury. This monitoring system is completely voluntary and the Division will not include any requirements for it in the operating permit. The Division has not yet certified the Mercury CEMS since the method has been vacated from the federal regulations.

The Division will require routine emission testing on the EAF (SRC 1 & SRC 3) in order to monitor emissions of VOC and lead (Pb). The original PSD construction permit required initial VOC and lead testing, which was conducted in 2007. Annual testing will be required in the permit with a reduced testing frequency if emissions are found to be below 75% of the emission limits (annual & BACT). If emissions are shown to be below 75% of the limits, testing is then required within three years instead of annually. If emissions are shown to be below 50% of the limits, testing is then required within five years instead of annually.

The Division will require annual testing of Hydrogen Fluoride (HF) emissions from the EAF (SRC 1 & SRC 3). HF emissions from the EAF have been monitored multiple times since 2006 with results ranging from 3.14 lb/hr (October 5, 2006 test) to 0.387 lb/hr (August 25-26, 2009 test). Due to the variability in the emission rate, and ERMS's desire to maintain its status as a Synthetic Minor source of HAPs, the Division will require the annual testing. AP-42 (12.5.1) states that fluoride emissions are influenced by site- and process-specific variability. The Division will require tracking of all additions to the scrap charge (including flux material, additives, etc.) during testing to help determine if there is a relationship between a specific material and HF emissions.

The CEMs requirements and permit language have been reviewed and approved by Dave Huber of the APCD.

The QA/QC plan for the EAF CEMs covers installation, operation, calibration, and maintenance. The Division has modified the QA/QC plan requirement slightly. The construction permit required submittal of the plan for Division review and approval. Current Division policy is to require the plan be available for review upon request, but no formal submittal and review is needed at this time. The Division has the authority to request revisions to the plan if needed.

COMPLIANCE ASSURANCE MONITORING (CAM)

ERMS identified the EAF as being subject to CAM. Potential uncontrolled emissions of PM exceeds the major source level, and this unit uses emission controls (i.e. two baghouses for PM control) to meet its PM emission limitations. Therefore, the EAF is potentially subject to the CAM requirements.

The Division agrees that CAM does apply to the EAF with respect to the PM emission limitations. Note that although the unit is subject to opacity limits, they are not emission limitations subject to CAM requirements. The source submitted a revised CAM plan on January 11, 2010, and an additional revised plan on November 8, 2010 in response to some initial comments from the EPA on the proposed CAM plan. The EAF is controlled with two baghouses, resulting in two exhaust stacks. In their CAM plan, the source proposed visible emissions, and particulate monitors as indicators. For visible emissions, excursions are identified as an opacity value exceeding 3%. For the particulate monitors, an excursion is defined as any particulate load reading above 40% of baseline scale.

The proposed CAM monitoring is as prescribed by NSPS subpart AAa, and is "presumptively acceptable" as described in 40 CFR 64.4 (b). The COM system described for baghouse 3 is presumptively acceptable in accordance with the provisions of 40 CFR 64.4 (b)(2). The particle monitors applied to baghouse 4 as a baghouse leak detection system (BLDS) is presumptively acceptable with the provisions of 40 CFR 64.4 (b)(3). It is recognized that the unit is subject to a mass emission limit of 0.0052 gr/dscfm for total particulate, and 0.0018 gr/dscfm for filterable particulate. Based on the experience gained at the site during performance tests, compliance with the visible emissions and demonstration of low to no leaks provided by the particle count monitors, is consistent with a demonstration of compliance with both mass emission limits, and has been supported with performance test results that have been submitted to CDPHE.

The Division has reviewed the CAM plan submitted and while we accept the plan in part, we consider that changes to the plan are necessary. The Division considers that the following changes are necessary to the plan.

Visible Emissions

Based on the relationship between particulate matter in a flue gas stream and opacity, an increase in opacity is a valid indication of increased particulate emissions due to compromised baghouse performance. Increased opacity emissions from typical levels, such as a sudden spike or a gradual increase are an indication that baghouse performance has decreased. An increase in opacity, defined as an opacity reading greater than 3% is a possible indication that a bag has failed. During normal operations with no bag failures, opacity emissions will be below 3%. The Division accepts the indicator range of 3% opacity and will include this in the permit.

The 4th hole baghouse opacity will be measured using a Continuous Opacity Monitoring System (COMS). The design of the canopy baghouse does not facilitate the use of a COMS. Thus, opacity will be monitored daily using EPA Reference Method 9. These opacity monitoring approaches are also required as part of NSPS Subpart AAa, which applies to the EAF. ERMS requested one daily 6-minute reading on the canopy baghouse. However, NSPS Subpart AAa requires at least three 6-minute readings. The Division has drafted the CAM plan to require three 6-minute readings to maintain consistency with other requirements.

Particulate Monitors

Five continuous particulate monitors are installed within the canopy baghouse, one monitor for each compartment. These monitors detect particulate activity within the compartment and can detect when there is a high relative change in particulate concentration. This change in particulate concentration could be an indication of a broken bag or other performance issue within the baghouse, causing an increase in emissions. The indicator range of 40% of baseline scale was chosen by ERMS to allow for normal particulate fluctuations while guarding against a significant increase in particulate activity. Baseline scale is not a set number. These systems are designed to automatically adjust baseline scale. ERMS supplied the Division with the Bag Leak Detection System (BLDS) Site Specific Monitoring Plan. This plan identifies that the baseline value, and the alarm set-point, will be recorded during each performance test, and will be reviewed following each required performance test, and revised as necessary.

NSPS AAa also requires the use of particulate monitors (bag leak detection system) and requires this system to meet specific operating requirements and specifications. ERMS submitted their site-specific monitoring plan for the BLDS, and this plan will be included with the CAM plan. The Division's Field Services Unit will be reviewing this plan for approval.

The Division will accept this indicator and range.

02PB0492 CONDITIONS

The requirements of the original PSD construction permit 02PB0492 have been incorporated into the Title V operating permit. However, some requirements have been omitted from the operating permit. All conditions are outlined in the table below. Conditions highlighted in "grey" have been omitted from the operating permit.

02PB0492 Condition #	Requirement Summary	Note
1	Required commencement of construction by December 21, 2005.	Requirement removed since construction has commenced.
2	Required shutdown of EAF #3.	Requirement removed since shutdown has occurred in accordance with CD.

3	Required ERMS to provide mfg., model, s/n of EAF.	Provided.
4	Required permit # to be marked on subject equipment.	CP-only requirement which has been conducted.
5	Self certification requirement.	CP-only requirement. OP requires annual certification.
6	Production limitations.	Incorporated into OP with requested changes to annual and short-term limits.
7	Emission limitations.	Incorporated into OP with requested changes due to BACT and production changes.
8	Fugitive Emission Control Plan.	Incorporated into OP under the sections: Scrap Pile Operations & EAF Wind Erosion.
9	BACT requirements	Incorporated into OP with requested changes to BACT emission limits.
10	Air pollution capture and control systems compliance demonstration.	This demonstration has been submitted.
11	CEMS requirements.	Included in OP.
12	CEMS QA/QC plan.	Included in OP. Formal review and approval no longer required.
13	Emission Factor development for CO, SO ₂ , NO _x .	CEMS and routine stack testing will now be used to demonstrate compliance with emission limits.
14	Initial source compliance tests.	The initial testing has been completed. The OP will require routine testing.
15	CEMS for CO required based on stack testing.	CO CEMS has been installed.
16	Operating and Maintenance plan requirement.	O&M plan no longer necessary due to inclusion of CAM plan in the operating permit.
17	Scrap Management Plan.	Incorporated into the OP under the Scrap Pile Operations section.
18	Fugitive Particulate Emissions Control Plan	Incorporated into OP under the sections: Scrap Pile Operations & EAF Wind Erosion.
19	Parametric Monitoring Plan	Included in OP.
20	Inspector access.	Included in OP.
21	Regulation No. 8 lead requirements.	Removed from OP since requirement has been removed from the Colorado Regulations.
22	NSPS Subpart AAa	Included in OP.
23	Regulation No. 6 PM requirements.	Included in OP.
24	Reg. 2 odor requirements.	Now found in Section IV – General Permit Conditions.
25	Public Access limitations.	Included in OP.
26	Pre-construction ambient air monitoring.	This requirement has been satisfied.
27	Remodel of near-field modeling analysis.	Completed in 2005.
28	Post-construction ambient air monitoring.	Monitoring requirements updated based on modeling results and guidance from APCD Technical Services Program. Pb, PM ₁₀ , NO ₂ , ozone & meteorology shall be monitored for at least 12 months.
29	Revised APEN requirements.	APEN requirements included in General Conditions.

The Division included Condition 1.24 which requires continued operation and maintenance of the equipment that was required to be installed by the CDs.

The Division included Condition 1.25 which requires the scrap mix to contain less than 3% oily scrap. This was a requirement of the federal CD. ERMS maintains records of the amount of oily scrap used in each batch and is required to maintain these records monthly.

AIR QUALITY IMPACT ANALYSIS

Please find the Modeling Review Comments attached to the end of this Technical Review Document, starting at page 27.

AIRS ID 040 – Demag Round Caster

The previous version of this permit included both this round caster and a billet caster. ERMS informed the Division on November 3, 2008 that the billet caster has been retired and is no longer being operated (since 1997). The Division has removed the billet caster from the permit.

ERMS has modified the caster requirements via the construction permit 93PB1073-4, which was reissued 5/20/2009. These changes have been incorporated into the operating permit. Changes to the permit include:

- Correct the design heat input rate from 44 mmBtu/hr to 22.7 mmBtu/hr.
- Reduction in natural gas usage.
- Reduction in steel throughput.
- Reduction in permitted emissions.
- Formatting & organizational changes.

The Title V Operating Permit had combined the two casters onto one point (AIRS ID 039). However, the APCD database has never been updated to reflect the combination. Since the billet caster has been canceled, it is more efficient to issue the round caster under its original AIRS ID 040. The Division has revised the Operating Permit to reflect the corrected AIRS ID#.

AIRS ID 106 – Vacuum Tank Degassing (VTD) with Flare

ERMS has modified the VTD requirements via the construction permit 93PB1073-2, which was reissued 5/20/2009. These changes have been incorporated into the operating permit. Changes to the permit include:

- Correct the emission factor to the factor determined during 2002 stack testing.
- Reduction in the CO emission limit from 2.57 ton/yr to 0.87 ton/yr.
- Removal of the other criteria pollutant limits (and emission factors) from the summary table. They do not have emission limits since emissions are very low (below APEN reporting levels).
- Removal of the steel processing limit, operating hours tracking, and fuel consumption tracking, and replacement with a limit on molten steel heats. The emission factor is based on the number of heats.
- Formatting & organizational changes.

AIRS ID 105 – VTD Boiler

ERMS has modified the boiler requirements via the construction permit 93PB1073-1, which was reissued 5/20/2009. These changes have been incorporated into the operating permit. Changes to the permit include:

- Increase in natural gas usage from 152.0 mmscf/yr to 162.0 mmscf/yr.
- Change in permitted emissions to match requested fuel use and current emission factors.
- Inclusion of the NSPS Dc requirements (reporting and recordkeeping).
- Inclusion of the Regulation No. 1 particulate emissions limit.
- Formatting & organizational changes.

AIRS ID 122 – Ladle Preheat Burners

The previous version of this permit did not include the ladle preheat burners. These stations contain natural gas fueled burners used to preheat the ladles. A modified construction permit

(08PB1241) was issued for these burners on 11/10/2009. The construction permit requirements have been incorporated into the operating permit. Requirements include:

- Emission limits for PM, PM10, SO2, NOX, VOC, and CO.
- Natural gas fuel use limitation.
- Regulation No. 1 particulate emission limit.
- Opacity limitations.

AIRS ID 125 – Reline Ladle Refractory

The previous version of this permit did not include the ladle refractory relining process. This process involves the replacement of the refractory material that is installed in the ladles. A binder material is used to cement the refractory bricks to the ladle. The newly relined ladles are then heated in a specific fashion to cure the material. A construction permit (09PB0883) was issued for this process on 11/10/2009.

The emission limits in the permit include combustion emissions from the two 8 mmbtu/hr burners and the VOC emissions from the binder and refractory material. Combustion emissions are calculated using emission factors from AP-42, and VOC refractory emissions are calculated using an engineering calculation.

The engineering calculation was submitted by ERMS based upon a conservative assumption of amount and type of material used in the reline process and associated emissions. The emissions were based upon the MSDS for current materials used. ERMS states that the current materials have been consistently used for a number of years. The permit contains a requirement to recalculate the emission factor whenever there is a change in the materials used, or the amount of materials used. This could be caused by an increase in ladle size, or a change in the reline process that causes the amount of materials used to increase. The Division will allow ERMS up to 60 days to revise the emission factor based upon any process changes. This calculation, along with the MSDS, must be maintained on site for Division review. Fuel use is restricted in the permit.

The construction permit requirements have been incorporated into the operating permit. Requirements include:

- Emission limits for PM, PM10, SO2, NOX, VOC, and CO.
- Natural gas fuel use limitation.
- A limitation on the number of ladle relines.
- The MSDS and emission calculation requirement mentioned above.
- Regulation No. 1 particulate emission limit.
- Opacity limitations.

AIRS ID 123 – Scrap Pile Operations

The previous version of this permit did not include a specific section for the scrap pile operations. This operation has been in existence at ERMS for many decades. The Title V renewal application contained information on this operation for inclusion in the permit. Recent actions require this to be contained in the Title V permit, including: Compliance Order on Consent 0005-03, construction permit 02PB0492. Permit requirements include:

- Utilization of optimized torch tips, revised torch operator monitoring procedures and automated over-water torch cutting system at all times.
- Compliance with the Scrap Management Plan. The most recent version of the Scrap Management Plan is found in Appendix I.
- Visible emissions checks.
- Compliance with the Fugitive Particulate Emissions Control Plan. The most recent version of the plan is found in Appendix J.

AIRS ID 128 – EAF Wind Erosion

The previous version of this permit did not include a specific section for the EAF wind erosion. An APEN was submitted for this emission source on 12/20/2007. The APEN reports fugitive particulate emissions associated with 24.1 acres of storage piles near the EAF building. This emission source has been in existence at ERMS for many decades. Permit requirements now include:

- Visible emissions checks.
- Compliance with the Fugitive Particulate Emissions Control Plan. The most recent version of the plan is found in Appendix J.

Slag Processing (screens & engine)

A slag processing operation is located at ERMS and is considered a single source with ERMS. A 2003 Compliance Order On Consent (0005-03) requires ERMS to submit an application to incorporate the slag processing activities into this operating permit. ERMS discussed this requirement with the Division and has requested that the requirement be modified to allow the slag processing to be covered in a separate operating permit issued to the slag processing operator. The Division will allow this request and is currently in the process of modifying the COC. Harsco Metals operates the slag operation and has submitted their operating permit application. The Division considered this application to be administratively complete as of January 25, 2010. The slag processing activities will not be included in ERMS's Steelmaking operating permit.

Facility-Wide HAP Emissions

In addition, the Division has included facility-wide emission limits for Hazardous Air Pollutants (HAPs). ERMS wishes to be considered a synthetic minor source for HAPs and these limits are necessary. ERMS submitted a HAP facility analysis to the Division on December 15, 2009 to provide a complete inventory of HAP emissions. This analysis includes PTE emissions from both permitted and exempt sources. The inventory reported 18.5 tons/yr of total HAPs, with no individual HAP exceeding 10 ton/yr. ERMS is considered a minor source of HAP emissions.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal. These changes are as follows:

Section I – General Activities and Summary

- The order of the conditions in this section has been rearranged to match recently issued Operating Permits.
- The list of construction permits under 1.3 has been updated. Section 1.3 also now lists the Consent Decrees and Compliance Orders that contain applicable requirements incorporated into the permit.
- In Condition 1.4, General Condition 3.d & 3.g. was added as a State-only requirement.
- Condition 3.1 was drafted to reflect the current status of ERMS with respect to PSD.
- Condition 3.2 now lists the Harsco Metals operating permit number.
- Condition 5 was added to address the CAM plan.
- Condition 7 and 8 contain the State and Federal Consent Decree requirements.

Section II – Specific Permit Terms

AIRS ID 110 – Ladle Metallurgy Station

The Division has changed the formatting and organization of these conditions. Also, Condition 3.7 language was modified to reference the Parametric Monitoring Plan as required by the Federal Consent Decree.

A revised APEN was submitted December 20, 2007 to revise the molten steel throughput and emissions for this station. The APEN requests a maximum throughput of 1,350,000 ton steel per year. This will reduce the particulate emissions limitations slightly. The Division has updated the permit to reflect the requested maximum production and lowered emission limits.

The lead emission factor has been updated based upon more recent analysis of the lead content of the baghouse dust. The lead content of the dust is 269 ppm, which equates to an emission factor of 1.8e-6.

The Division added a stack test requirement to measure emissions of NO_x, CO and SO₂. AP-42 provides emission factors for these pollutants in section 12.5.1. However, the emission factor rating is "E", which represents a poor rating that indicates the emission factors may not be representative. ERMS requested testing to measure emissions instead of relying on the poor emission factors. PM emissions were previously tested. The Division will not require additional PM testing at this time.

CAM Plan: The Division identified the baghouse connected to this device as needing a CAM Plan since pre-control device particulate emissions exceed the major source level. A request to submit this plan has been submitted to ERMS. ERMS subsequently submitted the CAM Plan.

COMPLIANCE ASSURANCE MONITORING (CAM)

Potential uncontrolled emissions of PM exceeds the major source level, and this unit uses emission controls (i.e. baghouse for PM control) to meet its PM emission limitations. Therefore, the Ladle Met Station is potentially subject to the CAM requirements.

The Division agrees that CAM does apply to the Ladle Met Station with respect to the PM emission limitations. Note that although the unit is subject to opacity limits, they are not emission limitations subject to CAM requirements. The source submitted a revised CAM plan in August, 2010. The Ladle Met Station is controlled with one baghouse. In their CAM plan, the source proposed visible emissions, and particulate monitors as indicators. For visible emissions, excursions are identified as an opacity value exceeding 10%. For the particulate monitors, an excursion is defined as any particulate load reading above 40% of baseline scale.

ERMS states that "Based on experience gained at the site during performance tests, demonstration of normal operation of the baghouse (as indicated by minimal leaks – information provided by the particle count monitors) is consistent with a demonstration of compliance with both the opacity limit and the emission limit.

Visible Emissions

Based on the relationship between particulate matter in a flue gas stream and opacity, an increase in opacity is a valid indication of increased particulate emissions due to compromised baghouse performance. Increased opacity emissions from typical levels, such as a sudden spike or a gradual increase are an indication that baghouse performance has decreased. An increase in opacity, defined as an opacity reading greater than 10% is a possible indication that a bag has failed. During normal operations with no bag failures, opacity emissions will be below 10%. The Division accepts the indicator range of 10% opacity and will include this in the permit.

Particulate Monitors (aka "Broken Bag Detector")

Five continuous particulate monitors are installed within the baghouse, one monitor for each compartment. These monitors detect particulate activity within the compartment and can detect when there is a high relative change in particulate concentration. This change in particulate concentration could be an indication of a broken bag or other performance issue within the baghouse, causing an increase in emissions. The indicator range of 40% of baseline scale was chosen by ERMS to allow for normal particulate fluctuations while guarding against a significant increase in particulate activity. Baseline scale is not a set number. These systems are designed to automatically adjust baseline scale. The Division will accept this indicator and range.

Insignificant Activities

The Division has removed the previous inspection, review, and notification requirements (previous Condition 8). This is not typically formally required in a Title V permit, and the Division no longer finds it necessary.

Emission Calculations Changes

The Division has removed previous condition 9 regarding emission factor changes. This note is more appropriately contained in the technical review document, and not as a permit condition. The spirit of the previous condition is contained in the language below.

From time to time published emission factors and/or other emission estimating methods are changed based on new or improved data. A logical concern is what happens if the use of the new factors/methods in a calculation results in a source being out of compliance with a permit limit. Except as noted below, the emission factors, equations, and/or other emission estimating methods included in the permit are considered to be fixed until changed by the permit. Obviously, emission factors dependent of the fuel sulfur content or heat content of the fuel can not be fixed and will vary with the test results. The method for determining the emissions is, however, fixed. It is the responsibility of the permittee to be aware of changes in the emission factors, etc. and to notify the Division in writing of impacts on the permit requirements when there is a change. Upon notification, the Division will work with the permittee to address the situation. In addition, the Division will review the factors, etc. as appropriate during permit modifications and renewals.

The exception to the above is that emission factors and/or other emission estimating methods used only to comply with the reporting requirements of Regulation No. 3, Part A, Section II can be updated and modified without a permit modification, although the resulting emission estimate may trigger permitting activities.

Reporting

The Division has removed previous condition 10 regarding reporting submittal deadlines. The Title V reporting deadlines are contained in the permit after the cover page.

Substitution for Manufacturer's Recommendations

The Division has removed previous condition 11 regarding documentation for procedures apart from the manufacturer's recommendations. The Division believes these instances are already documented in the various plans required of ERMS and a specific permit condition discussing this possibility is no longer necessary.

Parametric Monitoring

The Division has removed previous condition 12 outlining all the requirements of the parametric monitoring plan. A final parametric monitoring plan was approved by the Division on November 12, 2008. The requirement to follow the plan is outlined adequately in Section I (State and Federal Consent Decree requirements), and Section II conditions 1.11 & 3.7. The most recent version of the plan will be attached to the permit in Appendix H.

Section III – Permit Shield

- The reference to the permit shield has been updated.
- Some of the requirements listed in the table have been removed since they are no longer applicable.

Section IV – General Permit Conditions

- The Affirmative Defense Provision for Excess Emissions during Malfunctions language was added to condition 3.d.
- Condition 5 & 21: Replace “upset” with “malfunction”
- The definition of “prompt” has changed and Condition 21 has been updated with the new definition.
- Minor language changes to Condition 22.d have been incorporated.
- Labeled the 3rd paragraph of General Condition 29.a as 29.b and added the provisions in Reg 7, Section III.C as paragraph e.

Appendix B & C

- This language has been updated to reflect current standard language.
- The Appendix C requirement to document if the Data was continuous has been removed.

Appendix D

- The address of EPA has been updated.

Appendix F

- Cleared of past modifications.

Appendix G

- Added CAM Plan requirements.

Colorado Department of Public Health and Environment

Modeling Review Comments

APCD/TSP/MMEIU Project ID: 305-061205

Review Completed: 9/30/2010

Plant/Site Name: Rocky Mountain Steel Mill

Document Reviewed: --Application for Steel Mill EAF Project 1.01 Million Ton Annual Production Rate Permit 02PB0492, prepared for Rocky Mountain Steel Mills, Evraz Rocky Mountain Steel, dated August 7, 2009.

--Appendix C and Appendix D received May 20, 2010; Addendum to May 2010 Appendix received July 13, 2010; Appendix E received August 12, 2010; Additional modeling files (1-hr NO₂ and Pb) received August 12, 2010 and September 1, 2010.

Reviewed by: Doris Jung

Summary

Per the Stationary Sources Program, this PSD permit application is considered a "continuation" of the original PSD permit that was required under consent order and issued in 2004. The physical modifications have been completed and are in operation. The modification is an upgrade to the electric arc furnace and affects emissions from the canopy baghouse (point source SRC001) and the 4th hole baghouse with a stack (point source SRC003). Prior to this modification, the 4th hole baghouse did not have a stack (emissions emitted out of two (2) openings - volume sources SRC3A and SRC3B). For both the canopy and 4th hole baghouses, there is a net emissions decrease for the modification.

Modeling emission rates were reviewed and approved by the permit engineer.

Recommended Permit Condition #1: Impacts were estimated at ambient air receptors only (i.e., an ambient air boundary was assumed in the modeling). Hence, the construction permit is recommended to contain a condition that requires a ambient air boundary plan be in place for the duration of permit effectiveness that precludes public access to areas exempt from ambient air. The plan would include detailed maps showing the elements that constitute the ambient air boundary, including the location of the fences, gates, and areas to be posted/patrolled.

Recommended Permit Condition #2: Post-construction monitoring is recommended for nitrogen dioxide, ozone, lead, PM₁₀ (suitable for metals analysis) and meteorology. See Item 28 for further discussion and recommended permit language.

Public Notice: Upon Division request, EPA approval has been obtained to use an alternative model (AERMOD with the Ozone Limiting Method) to estimate ambient NO₂ concentrations. The public comment period provides an opportunity for comment on this alternative model use, as required under Colorado AQCC Regulation No. 3, Part A, Section VIII.A.

Impacts for the proposed affected equipment (SRC001 and SRC003) or the modification, proposed minus pre-modification (SRC1A, SRC3A, SRC3B), are below modeling significance levels (EPA established and Colorado interim) for the following pollutants/averaging periods:

- Maximum 1-hr CO (proposed) - 453 ug/m³
- Maximum 8-hr CO (proposed) - 256 ug/m³
- Maximum 1-hr SO₂ (modification) - 3.0 ug/m³
- Maximum 3-hr SO₂ (modification) - 1.7 ug/m³
- Maximum 24-hr SO₂ (modification) - 0.14 ug/m³
- Maximum annual SO₂ (modification) - 0.0 ug/m³
- Maximum 24-hr PM₁₀/PM_{2.5} (modification) - 0.13
- Maximum annual PM₁₀/PM_{2.5} (modification) - 0.0 ug/m³

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-Maximum annual NO2 (proposed) - 0.67 ug/m3

Therefore, no NAAQS/CAAQS or increment analyses were performed for the above pollutants/averaging periods.

A cumulative impact analysis was performed for the 3-month rolling Pb NAAQS. The maximum 3-month Pb cumulative impact (plus background) is 0.123 ug/m3 (82% of the 0.15 ug/m3 rolling 3-month Pb NAAQS). Therefore, compliance with the Pb NAAQS (0.15 ug/m3 rolling 3-month and 1.5 ug/m3 quarterly) has been demonstrated. The proposed modification at RMSM will not cause or contribute to a violation of the Pb NAAQS.

A cumulative impact analysis was performed for the 1-hr NO2 NAAQS (refer to Attachment D for basis). There are numerous modeled violations of the 1-hr NO2 NAAQS in the Pueblo area (8th and lower nth highs). The maximum modeled 1-hr NO2 concentration (no background) is 215 ppb. However, the maximum 1-hr NO2 impact from the modification is 1.05 ppb, 25% of Colorado's interim SIL for 1-hr NO2. Therefore, the proposed modification at RMSM will not cause or contribute to a violation of the 1-hr NO2 NAAQS.

Ozone modeling was not performed. See Item 26 for further discussion.

A growth analysis was not performed. See Item 30 for further discussion.

The soils and vegetation analysis indicates no adverse impacts on vegetation or soils from this proposed facility.

Visibility (near-field and far-field), Class I increment, AQRV impacts were addressed in modeling submitted and reviewed for the 2003 application, which are referenced in Appendix E of the permit application. The Division review summaries for visibility, Class I increments, and AQRV impact analyses are included in Attachment G.

Review Checklist

1. Topographic Map with Site and Receptor Locations

Missing

2. Plant/Site Plot Plan

Satisfactory

Very general plan included in the application.

3. Building Dimension Data

Satisfactory

Included in BPIPPRM file. Downwash was modeled for the following facilities: RMSM, Comanche Power Plant, GCC Rio Grande Cement Plant, Holcim-Florence, Davis Wire, Black Hills - PAGS, Black Hills (formerly Aquila) - Pueblo Power Plant, Fountain Valley Power, and Squirrel Creek Energy Center.

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Building elevations were re-determined using AERMAP/NED prior to running BPIPPRM.

4. Determination of Fenceline

Satisfactory

Ambient air receptors were placed according to Figure 1. Measures are necessary to preclude public access to the areas exempt from ambient air and should be included in the permit as an enforceable condition.

5. Identification of Nearby Nonattainment Areas

Not Applicable

No nearby nonattainment or attainment/maintenance areas.

6. Identification of Pollutants/Averaging Periods to Model

Satisfactory

PM₁₀ (24-hr, annual), PM_{2.5} (24-hr, annual), SO₂ (1-hr, 3-hr, 24-hr, annual), NO₂ (1-hr, annual), CO (1-hr, 8-hr), Pb (3-month rolling average, quarterly).

7. On-Site NAAQS/Non-Criteria Pollutant Emission Inventory

Satisfactory

The modeling review engineer defers to the permit review engineer to verify emission rates and stack parameters of the proposed facility. Modeled emission rates were compared to Tables 1 and 2. Stack parameters are consistent with previously approved values (2005 analysis) and summarized in Attachment A. The derivation of non-stack releases are discussed in the application.

8. On-Site PSD Increment Emission Inventory

Not Applicable

Impacts for pollutants/averaging periods with PSD increments are below the SILs (i.e., increment analysis not triggered).

9. Off-Site NAAQS/Non-Criteria Pollutant Emission Inventory

Satisfactory

Cumulative impact analyses were performed for 1-hr NO₂ and monthly Pb.

Nearby source inventories were obtained from SSP/Inventory Group. When available, refined modeling data for select nearby sources were used, as indicated in Table 2. This includes the non-modified sources at the steel mill, Comanche Power Plant, GCC Rio Grande Cement Plant, Holcim-Florence, Davis Wire, Black Hills - PAGS, Black Hills (formerly Aquila) - Pueblo Power Plant, Fountain Valley Power, and Squirrel Creek Energy Center. This is provided in Attachment A.

Since individual 1-hr NO₂ plume contributions will vary depending on the cumulative

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Air Pollution Control Division / Technical Services Program

Modeling Review Comments

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Reviewed by: Doris Jung

plume impacts (see Item 15 below regarding NO₂ conversion), some sensitivity runs were completed using a select number of nearby sources (the list of facilities in the above paragraph with refined modeling data) to compare with the model runs using the full nearby source inventory. For this 1-hr NO₂ analysis, the comparison indicates very little change in contribution from the modification (max 0.04 ppb) with a condensed nearby source inventory.

10. Off-Site PSD Increment Emission Inventory

Not Applicable

Cumulative impact analyses were not triggered for pollutants/averaging periods with PSD increments.

11. Background Concentration(s)

Satisfactory

Obtained from Nancy Chick. See Attachment B.

12. Selection of Model(s)

Satisfactory

AERMOD (09292).
AERMET (06341).
AERMAP (09040).
BPIPPRM (04274).

A few post-processors were developed in-house to determine the contribution of the modification to modeled violations, the modification impact (sorted) at all receptors for all hours, and the maximum modification impact at each receptor.

13. Selection of Modeling Parameters

Satisfactory

Urban (population of 141,472): CO URBANOPT 141472 PUEBLO 1.

Urban area boundary provided in Attachment C. Urban designation was determined with the land use typing scheme proposed by Auer.

Sources within the urban boundary (Attachment C) are modeled as an urban source (URBANSRC). The exceptions are the boiler stacks at the Comanche Power Plant. Due to their location, the plume from these stacks could be caught in the urban air mass, particularly when impacting in the vicinity of RMSM.

For urban - "SO₂" was specified for keyword POLLUTID (4 hr half life).

14. Receptor Network

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Modeling Review Comments

APCD/TSP/MMEIU Project ID: 305-061205

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Plant/Site Name: Rocky Mountain Steel Mill

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Satisfactory

Refer to Figure 1 for the significant impact analysis receptors.
50-m spacing: ambient air within property area, right-of-way rail line.
100-m spacing: out to approx. 1 km from edge of property boundary.
250-m spacing: approx. 1 km to 3 km from edge of property boundary.
500-m spacing: approx. 3 km to 10 km from edge of property boundary.

For the Pb cumulative impact analysis, the above receptor network was used.

For the 1-hr NO₂ cumulative impact analysis, the receptor network above was reduced to receptors with maximum combined SRC001 and SRC003 1-hr NO₂ impacts (100% NO₂ conversion) that are greater than 4 ppb.

15. Treatment of Atmospheric Chemistry (NO_x conversion)

Satisfactory

Tier 3 - OLM/AERMOD. Refer to Division request and EPA Region 8 approval in Attachment D.

16. Standard Temperature Pressure Corrections

Not Applicable

STP corrections are currently not required for permit modeling in Colorado.

17. Meteorological Data for Model(s)

Satisfactory

Upper Air - Denver.

SURFACE - Rocky Mountain Steel
DATA RMSM_all.dat
READ 1 OSYR OSMO OSDY OSHR DT01 RH02 INSO WS03 TT02 WD03 PRES
FORMAT 1 (t3,i2,i3,t54,f10.2,f10.1,20X,f10.0,10x,f10.2,f10.1,f10.1,f10.0)
XDATES 08/3/1 TO 09/2/28
LOCATION 99999 38.243N 104.599W 0 1453
THRESHOLD 0.25
OBS/HOUR 1
DELTA_TEMP 1 1.83 7.62
OSHEIGHTS 1.83 7.62 10

The meteorological data is considered adequately representative of transport and dispersion within the modeling domain. There are no design concentration limitations.

18. Other Modeling Data

Satisfactory

Seasonal diurnal ozone profiles were developed from hourly data to implement

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Plant/Site Name: Rocky Mountain Steel Mill

Document Reviewed: --Application for Steel Mill EAF Project 1.01 Million Ton Annual Production Rate Permit 02PB0492, prepared for Rocky Mountain Steel Mills, Evraz Rocky Mountain Steel, dated August 7, 2009.

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OLM/AERMOD (refer to Attachment D).

19. Modeling Input/Output Files Provided Electronically

Satisfactory

20. Comparison of Impacts with Significance Levels

Satisfactory

Impacts for the proposed affected equipment (SRC001 and SRC003) or the modification, proposed minus pre-modification (SRC001, SRC3A, SRC3B), are below modeling significance levels (EPA established and Colorado interim) for the following pollutants/averaging periods: CO (1-hr and 8-hr), SO₂ (1-hr, 3-hr, 24-hr, annual), NO₂ (annual), PM₁₀/PM_{2.5} (24-hr, annual).

Colorado interim SILs are 4 ppb for 1-hr NO₂, 0.3 ug/m³ for annual PM_{2.5}, 1.2 ug/m³ for 24-hr PM_{2.5}, and 4 ug/m³ for 1-hr SO₂.

21. Comparison of Impacts with Class I 24hr 1ug/m³ Rule

Not Applicable

Facility is more than 10 km from the nearest Class I area.

22. Compliance with "75% of Applicable Increment" Rule

Not Applicable

Impacts for pollutants/averaging periods with PSD increments are below the SIL (i.e., increment analysis not triggered).

23. Selection of Geographic Area for Full Impact Analysis

Satisfactory

24. Compliance with Class I PSD Increments

Not Applicable

Impacts for pollutants/averaging periods with PSD increments are below the SIL (i.e., increment analysis not triggered).

25. Compliance with Class II PSD Increments

Not Applicable

Impacts for pollutants/averaging periods with PSD increments are below the SIL (i.e., increment analysis not triggered).

26. Compliance with NAAQS and State Standards

Satisfactory

A cumulative impact analysis was performed for the 3-month rolling Pb NAAQS. The maximum 3-month Pb cumulative impact (plus background) is 0.123 ug/m³ (82% of the 0.15 ug/m³ rolling 3-month Pb NAAQS). Therefore, compliance with the Pb NAAQS

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(0.15 ug/m³ rolling 3-month and 1.5 ug/m³ quarterly) has been demonstrated. The proposed modification at RMSM will not cause or contribute to a violation of the Pb NAAQS. Refer to Attachment E.

A cumulative impact analysis was performed for the 1-hr NO₂ NAAQS (refer to Attachment D for basis). There are numerous modeled violations of the 1-hr NO₂ NAAQS in the Pueblo area (8th and lower nth highs). The maximum modeled 1-hr NO₂ concentration (no background) is 215 ppb. However, the maximum 1-hr NO₂ impact from the modification is 1.05 ppb, 25% of Colorado's interim SIL for 1-hr NO₂. Therefore, the proposed modification at RMSM will not cause or contribute to a violation of the 1-hr NO₂ NAAQS. Refer to Attachment E.

Ozone modeling was not performed. Under the authority provided by Colorado AQCC Regulation No. 3, the Division can require ozone modeling for proposed sources or modifications during the permit review process if a quantitative compliance demonstration is feasible and warranted. The decision to require ozone modeling is made on a case-by-case basis. Due to the complexity of ozone formation, ozone modeling is typically conducted during planning processes outside the permit process. As such, current permit modeling practices limit ozone modeling to when it is feasible (SIP-quality ozone modeling and representative monitoring networks to validate photochemical model performance) and warranted (when a proposed source or modification is anticipated to cause a violation or interfere with attainment/maintenance of the ozone NAAQS, as determined by professional judgment).

When ozone modeling is not feasible or warranted for new sources or modifications subject to PSD requirements, ozone concentration estimates are unavailable to determine if the proposed source or modification will not cause or contribute to a violation of the ozone NAAQS. In those situations, pre-construction ozone monitoring data required pursuant to Regulation No. 3, Part D, Section VI.A.3 (Pre-construction Monitoring and Analysis) and other data will be used by the Division to determine if the area is likely to meet the ozone NAAQS. If the Division's analysis indicates the proposed source or modification will cause a violation or interfere with attainment/maintenance of the ozone NAAQS, permit terms and conditions will be considered to address compliance.

27. Compliance with Non-Criteria Pollutant Thresholds

Not Addressed

28. Determination of Pre-/Post-Monitoring Requirements

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Not Addressed

There are widespread modeled violations of the 1-hr NO₂ NAAQS. NO_x to NO₂ conversion using the ozone limiting method and compliance demonstration relied on ozone data that is marginally representative and not concurrent with the meteorological data period. Although this use of this data has been deemed acceptable for the current permit application in the absence of superior data, data collected through post-construction monitoring efforts would considerably reduce uncertainties from these assumptions and improve estimations of impacts from future modifications at RMSM or from new or modified sources in the area.

Monitoring of lead was required in the 2004 issued permit on a 1-in-3 interval. Monitored lead levels are close to 50% of the Pb NAAQS (0.15 ug/m³). The maximum modeled 3-month rolling average of cumulative lead impacts is ~82% of the Pb NAAQS (0.15 ug/m³). Additional monitoring of lead would provide valuable information on the impacts from changes in production (short-term production limit increase is proposed for this version of the PSD application).

Therefore, under the authority provided under CO AQCC Regulation No. 3. Regulation No. 3, Part D, Section VI.A.4., the Division should require RMSM to conduct post-construction monitoring of nitrogen dioxide, ozone, lead, and meteorology.

Monitoring of various pollutants related to steel making was required in the 2004 issued permit. CDPHE's Colorado Cooperative Program for Environmental Health Assessments evaluated the potential health hazards with respect to the monitored particulate levels with the focus on chromium, manganese, nickel, arsenic, cadmium, and beryllium. This Letter Health Consultation prepared by CDPHE indicates the possibility of adverse health effects based on past monitored levels and recommends that RMSM continue monitoring of PM₁₀ as part of the public health action plan (Attachment F). Therefore, post-construction monitoring should include PM₁₀ (suitable for metals analysis).

Recommended post-construction permit language: Post-construction ambient monitoring shall be conducted for a minimum of twelve (12) months and shall begin within three (3) months, or within another period approved in writing by the Division, after commencement of operation of the modification covered under this permit. Additional post-construction monitoring beyond the twelve (12) month period may be necessary to determine the effect emissions from the modification have, or may have, on air quality in any area. With the submittal of data for the minimum twelve (12) month period, the permittee may request that further monitoring be waived. The Division will consider such request in the context of the data for the aforementioned purposes of post-

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construction monitoring, and if appropriate grant such a waiver. Locations of monitoring stations and procedures for data collection, compilation and reporting shall be submitted to, and approved by, the Division. Post-construction monitoring is required for lead, particulate matter less than 10 microns (suitable for metals analysis), nitrogen dioxide, ozone, and meteorology.

29. Visibility Impairment and AQRV Analyses

Satisfactory

Permitting action is a continuation of the original PSD application (2003). Since there is a net decrease in emissions, the 2003 visibility and AQRV analyses are referenced in Appendix E of the application for this permitting action. See Attachment G for the Division's review of the 2003 analyses.

30. Anticipated Growth/Soils/Vegetation Analyses

Satisfactory

An anticipated growth analysis is not necessary because this is an existing facility and growth is not expected from this modification.

Based on the information provided by the applicant on vegetation and soils impacts from the proposed modification, the data suggest that impacts will not adversely affect commercial or recreational vegetation.

31. Compliance with Regulations in Affected Adjacent States

Not Applicable

32. Risk Assessment

Indeterminate

CDPHE's Colorado Cooperative Program for Environmental Health Assessments evaluated the potential health hazards with respect to the monitored particulate levels with the focus on chromium, manganese, nickel, arsenic, cadmium, and beryllium. Refer to Attachment F.

No other risk assessments were performed. An impact analysis for mercury was completed in 2003/2005 for the previous permit issuance. Since there have been reductions in the use of mercury-containing scrap (Pueblo Mercury Reduction Supplemental Environmental Project) and recent stack tests have indicated significant reductions in mercury emissions, SSP did not request a mercury risk assessment for this permitting action.

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Access to data, notes, and files:

All information necessary to form the basis of the air quality compliance demonstration is transmitted to the permit reviewer for inclusion in the permit file.

In some cases, the Technical Services Program retains ambient air monitoring and modeling data, ambient monitoring and modeling plans and reports, electronic modeling input/output files, and other files. These files may contain documents that are considered to be part of a deliberative process.

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